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Compressed Gas Association

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CGA-341—2023 SPECIFICATION FOR INSULATED CARGO TANK FOR NONFLAMMABLE CRYOGENIC LIQUIDS

EIGHTH EDITION

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1 Introduction and scope

This standard contains specifications for a cargo tank with very efficient insulation and relatively low heat leak to the lading. This cargo tank resembles an oversized thermos bottle because the liquid container is supported in an approximately concentric manner within the outer jacket, with insulation contained in the annular space. Thus, the outer jacket is often the primary structural member anchored to the truck bed or the tandem and upper coupler (fifth wheel) assemblies.

This cargo tank specification contains the suggested minimum guidelines for insulated, non-DOT specification cargo tanks intended for transporting nonflammable cryogenic liquids such as argon, helium, nitrogen, and oxygen at pressures less than 25.3 psi (174 kPa) in the highway mode in the United States.^{1,2} These cargo tanks are allowed by paragraph 173.320 of the U.S. Department of Transportation (DOT) Title 49 of the U.S. *Code of Federal Regulations* (49 CFR) [2].

In Canada, the *Transportation of Dangerous Goods Regulations (TDG Regulations)* of Transport Canada (TC) apply [3]. These regulations require that cargo tanks be constructed, used, and maintained in accordance with CSA B620, *Highway tanks and TC portable tanks for the transportation of dangerous goods* and CSA B622, *Selection and use of highway tanks, TC portable tanks, and ton containers for the transportation of dangerous goods, Class 2* [4, 5].

2 Definitions

For the purpose of this publication, the following definitions apply.

2.1 Publication terminology

2.1.1 Shall

Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

2.1.2 Should

Indicates that a procedure is recommended.

2.1.3 May

Indicates that the procedure is optional.

2.1.4 Will

Used only to indicate the future, not a degree of requirement.

2.1.5 Can

Indicates a possibility or ability.

2.2 Technical definitions

2.2.1 ASME Code

Edition and addenda of Section VIII, Division 1, "Pressure Vessels," of the ASME *Boiler & Pressure Vessel Code* of the American Society of Mechanical Engineers in effect at the date of tank manufacture [6].

2.2.2 Cargo tank

Assembled liquid container (including insulation, support system, and outer jacket) that either is permanently attached to or forms a part of a road vehicle or is not permanently attached to a road vehicle but by reason of its size, construction, or attachment to a road vehicle is loaded or unloaded without being removed from the road vehicle.

¹ psi, bar, and kPa shall indicate gauge pressure unless otherwise noted as (psia; bar, abs; and kPa, abs) for absolute pressure or (psid; bar, dif; and kPa, dif) for differential pressure. All kPa values are rounded off per CGA P-11, *Guideline for Metric Practice in the Compressed Gas Industry* [1].

² References are shown by bracketed numbers and are listed in order of appearance in the reference section.